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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/661,319   | 09/12/2003  | Robert L. Armstrong  | 37000 CIP2 9906     | 9312             |
| 5179   | 7590        | 01/11/2006           | EXAMINER            |                  |
| PEACOCK MYERS, P.C.<br>201 THIRD STREET, N.W.<br>SUITE 1340<br>ALBUQUERQUE, NM 87102 |             |                      | GEISEL, KARA E      |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2877                |                  |

DATE MAILED: 01/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |   |  |
|------------------------------|--------------------------------------|---|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/661,319 | <b>Applicant(s)</b><br>ARMSTRONG ET AL. |  |
|                              | <b>Examiner</b><br>Kara E. Geisel    | <b>Art Unit</b><br>2877                 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-186 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26-58, 106-115, 119-129, 143-146, 151-154, 156-162, 167-170, 175-178 and 183-186 is/are allowed.
- 6) ☒ Claim(s) See Continuation Sheet is/are rejected.
- 7) ☒ Claim(s) 3, 14, 22, 25, 61, 64, 67, 74, 81, 84-93, 95-101, 104, 141, 142 and 155 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>0404, 1204</u> | 6) <input type="checkbox"/> Other: _____  |

Continuation of Disposition of Claims: Claims rejected are 1,2,4-13,15-21,23,24,59,60,62,63,65,66,68-73,75-80,82,83,94,102,103,105,116-118,130-140,147-150,163-166,171-174 and 179-182.

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## DETAILED ACTION

### *Information Disclosure Statement*

The information disclosure statements filed on April 23<sup>rd</sup>, 2004 and December 20<sup>th</sup>, 2004 have been fully considered by the examiner.

### *Specification*

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### *Claim Objections*

Claims 65, 102, 116, 155 and 179 are objected to because of the following informalities: minor typographical error.

In regards to claims 65, 102, 116, 155 and 179, line 5, 5, 5, 5 and 6, respectively, it appears that "of" should be replaced with --for detecting-- to clarify the claim.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8-11, and 116-118, 130-138, 147-150, 163-166, 179-182 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites the limitation "said nanoparticles" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 recites the limitation "said nanoparticles" in line 3. There is insufficient antecedent basis for this limitation in the claim.

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Claim 94 depends on itself, instead of another claim. Correction is required

Claims 94, 116, 130, 133, 136, 147, 163, 171, 179 are incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: where the microcavity is in relation to the other parts.

Claims, which are dependent from claim(s) 8, 10, 94, 116, 130, 133, 136, 147, 163, 171 inherit the problems of these claim(s), and are therefore also rejected under 35 U.S.C. 112, second paragraph.

### *Double Patenting*

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 60, 63, 66, 73, and 80 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1, 4, 7, 13, and 19, respectively, of prior U.S. Patent No. 6,781,690. This is a double patenting rejection.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or

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claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-25, 4-13, 15-21, 23-24 and 139-140 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 4-5, 12, 14, 18-19, 21-22, 26-27, 29-30, 41-42, and 44-45, of U.S. Patent No. 6,608,716. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the reasons listed below.

In regards to claim 1, claim 1 of '716 clearly anticipates a light emitting apparatus comprising at least one light source, a medium, which can comprise a fractal medium, and a microcavity, wherein the medium is located in the vicinity of the microcavity.

In regards to claim 2, claim 1 of '716 clearly anticipates that the medium can comprise aggregated nanoparticles comprising fractals.

In regards to claim 4, claim 4 of '716 clearly anticipates that the microcavity comprises a solid microcavity and the medium is embedded within the solid microcavity.

In regards to claim 5, claim 5 of '716 clearly anticipates that the microcavity comprises a hollow cavity, and that the medium is located within the hollow microcavity.

In regards to claim 6, claim 12 of '716 clearly anticipates that the medium comprises individual nanoparticles each of an average diameter that is less than the optical wavelength of interest.

In regards to claim 7, claim 14 of '716 clearly anticipates that the microcavity comprises an exterior dimension that is at least twice that of the optical wavelength of interest.

In regards to claim 8, claim 18 of '716 clearly anticipates that the apparatus further comprises at least one molecule selected from the group consisting of optically active organic and inorganic molecules, adsorbed on a surface of nanoparticles.

In regards to claim 9, claim 19 of '716 clearly anticipates that the at least one molecule comprises at least one molecule selected from the group consisting of laser dye and sodium citrate molecules.

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In regards to claim 10, claim 21 of '716 clearly anticipates that the apparatus further comprises at least one molecule selected from the group consisting of optically active organic and inorganic molecules, located within the light wavelength of the surface of the nanoparticles.

In regards to claim 11, claim 22 of '716 clearly anticipates that the at least one molecule comprises at least one molecule selected from the group consisting of laser dye and sodium citrate molecules.

In regards to claim 12, claim 26 of '716 clearly anticipates a method of enhancing the optical emission of a material comprising the steps of providing a medium, which can be a fractal medium, doping the medium with the material, locating the doped medium in the vicinity of a microcavity, and exciting the doped medium with at least one light source.

In regards to claim 13, claim 26 of '716 clearly anticipates that the medium can comprise aggregated nanoparticles comprising fractals.

In regards to claim 15, claim 27 of '716 clearly anticipates doping the medium with at least one material selected from the group consisting of a single molecule, a plurality of molecules, a nanocrystal, a solid matrix, DNA, DNA fragments, amino acids, antigen, antibodies, bacteria, bacterial spores, and viruses.

In regards to claim 16, claim 29 of '716 clearly anticipates embedding the medium within a solid microcavity.

In regards to claim 17, claim 30 of '716 clearly anticipates locating the medium within a hollow microcavity.

In regards to claim 18, claim 41 of '716 clearly anticipates doping with at least one molecule selected from the group consisting of optically active organic and inorganic molecules, located within the light wavelength of the surface of the medium.

In regards to claim 19, claim 42 of '716 clearly anticipates that the at least one molecule comprises at least one molecule selected from the group consisting of laser dye and sodium citrate molecules.

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In regards to claim 20, claim 44 of '716 clearly anticipates an amplifying apparatus having a gain greater than 1.2, the apparatus comprising at least one light source, a microcavity, and a medium, which can be a fractal medium, located in the vicinity of the microcavity.

In regards to claim 21, claim 44 of '716 clearly anticipates that the medium can comprise aggregated nanoparticles comprising fractals.

In regards to claim 23, claim 45 of '716 clearly anticipates a method of amplification comprising providing a medium, which can be a fractal medium, locating the medium in the vicinity of a microcavity to amplify optical emission, and exciting the medium with at least one light source.

In regards to claim 24, claim 45 of '716 clearly anticipates that the medium can comprise aggregated nanoparticles comprising fractals.

In regards to claim 139, claim 44 of '716 clearly anticipates an optical amplifier comprising a medium, which can be a fractal medium, a microcavity, and a light source incident on the medium.

In regards to claim 140, claim 44 of '716 clearly anticipates that the medium can comprise aggregated nanoparticles comprising fractals.

Claims 59, 62, 65, 68-72, 75-79, 82-83, 102-103 and 105 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 4, 7-13, and 15-18, of U.S. Patent No. 6,781,690. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the reasons listed below.

In regards to claim 59, claim 1 of '690 clearly anticipates an optical sensing enhancing material comprising a fractal medium, and a microcavity, wherein the medium is located in a vicinity of the microcavity.

In regards to claim 62, claim 4 of '690 clearly anticipates a method of making an optical sensing enhancing material comprising providing a microcavity, and locating a fractal medium in a vicinity of the microcavity.



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In regards to claim 65, claim 7 of '690 clearly anticipates an optical sensor comprising a fractal medium, a microcavity, wherein the medium is located in a vicinity of the microcavity, a light source incident on the medium, and a detector for detecting light reflected from the medium.

In regards to claim 68, claim 9 of '690 clearly anticipates that at least one analyte is placed in direct contact with the medium.

In regards to claim 69, claim 10 of '690 clearly anticipates the at least one analyte is remote from the medium.

In regards to claim 70, claim 11 of '690 clearly anticipates that the light source comprises two counterpropagating light sources.

In regards to claim 71, claim 12 of '690 clearly anticipates that the microcavity is selected from the group consisting of quartz tubs and quartz rods.

In regards to claim 72, claim 13 of '690 clearly anticipates an optical sensing method comprising providing a doped fractal medium with a material, locating the doped medium in the vicinity of a microcavity, exciting the doped medium with a light source, and detecting light reflected from the doped medium.

In regards to claim 75, claim 15 of '690 clearly anticipates that at least one analyte is placed in direct contact with the doped medium.

In regards to claim 76, claim 16 of '690 clearly anticipates the at least one analyte is remote from the medium.

In regards to claim 77, claim 17 of '690 clearly anticipates that the light source comprises two counterpropagating light sources.

In regards to claim 78, claim 18 of '690 clearly anticipates that the microcavity is selected from the group consisting of quartz tubs and quartz rods.

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In regards to claim 79, claim 18 of '690 clearly anticipates a method of detecting a material, comprising exciting both the material and a fractal medium in the vicinity of a microcavity with at least one light source, and detecting spectroscopic data of the material.

In regards to claim 82, claim 1 of '690 clearly anticipates an optical enhancing material comprising a fractal medium and a microcavity.

In regards to claim 83, claim 1 of '690 clearly anticipates that the medium comprises aggregated nanoparticles comprising fractals.

In regards to claim 102, claim 7 of '690 clearly anticipates an optical sensor comprising a fractal medium, a microcavity, a light source incident on the medium, and one or more detectors for detecting light reflected from the medium.

In regards to claim 103, claim 7 of '690 clearly anticipates that the medium comprises aggregated nanoparticles comprising fractals.

In regards to claim 105, claim 8 of '690 clearly anticipates that the detector detects at least one signal selected from the group consisting of fluorescence, spontaneous emission, Raman scattering, etc.

*Allowable Subject Matter*

Claims 26-58, 106-115, 119-129, 143-146, 151-154, 156-162, 167-170, 175-178, and 183-186 are allowed over the prior art of record.

Claim 155 would be allowable if rewritten or amended to overcome the objections, set forth in this Office action.

Claims 3, 14, 22, 25, 61, 64, 67, 74, 81, 84-93, 95-101, and 104 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

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As to claim 3, the prior art of record, taken alone or in combination, fails to disclose or render obvious a light emitting apparatus wherein a medium comprises a semicontinuous metal film of randomly distributed metal particles and their clusters at approximately their percolation threshold, in combination with the rest of the limitations of claim 3.

As to claim 14, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method of enhancing the optical emission of a material wherein providing comprises providing a semicontinuous metal film of randomly distributed metal particles and their clusters at approximately their percolation threshold, in combination with the rest of the limitations of claim 14.

As to claim 22, the prior art of record, taken alone or in combination, fails to disclose or render obvious an amplifying apparatus having a gain greater than 1.2, wherein a medium comprises a semicontinuous metal film of randomly distributed metal particles and their clusters at approximately their percolation threshold, in combination with the rest of the limitations of claim 22.

As to claim 25, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method of amplification wherein providing comprises providing a semicontinuous metal film of randomly distributed metal particles and their clusters at approximately their percolation threshold, in combination with the rest of the limitations of claim 25.

As to claim 26, the prior art of record, taken alone or in combination, fails to disclose or render obvious a wavelength translation apparatus comprising a fractal medium and a microcavity, wherein the medium is located in the vicinity of the microcavity, in combination with the rest of the limitations of claim 26.

As to claim 29, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method of wavelength translation comprising providing a fractal medium and locating the medium in the vicinity of a microcavity, in combination with the rest of the limitations of claim 29.

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As to claim 33, the prior art of record, taken alone or in combination, fails to disclose or render obvious an optical parametric oscillator comprising a fractal medium and a cavity, wherein the medium is located in the vicinity of the cavity, in combination with the rest of the limitations of claim 33.

As to claim 37, the prior art of record, taken alone or in combination, fails to disclose or render obvious a light detection and ranging system comprising a fractal medium and a microcavity, wherein the medium is located in the vicinity of the microcavity to amplify the received light, in combination with the rest of the limitations of claim 37.

As to claim 40, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method of optical data storage comprising providing a fractal medium, locating the medium in the vicinity of a microcavity and generating hot spots in the medium due to intensity differences of different wavelengths, and spectral hole burning the medium due to photomodification, thereby creating high density storage capabilities, in combination with the rest of the limitations of claim 40.

As to claim 43, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method of detecting a material, wherein the material is a material selected from the group consisting of chemical compounds and biological materials, using near-field optical spectroscopy, comprising and locating the material within a distance shorter than the light wavelength from a near-field optical detector, in combination with the rest of the limitations of claim 43.

As to claims 61, 67, 84, 104 and 141, the prior art of record, taken alone or in combination, fails to disclose or render obvious an optical sensing enhancing material, an optical sensor, an optical enhancing material, or an optical amplifier wherein a medium comprises a semicontinuous metal film of randomly distributed metal particles and their clusters at approximately their percolation threshold, in combination with the rest of the limitations of claims 61, 67, 84, 104 and 141.

As to claims 64, 74 and 81, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method of making an optical sensing enhancing material, an optical sensing method,

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or a method of detecting a material wherein providing comprises providing a semicontinuous metal film of randomly distributed metal particles and their clusters at approximately their percolation threshold, in combination with the rest of the limitations of claims 64, 74 and 81.

As to claim 91, the prior art of record, taken alone or in combination, fails to disclose or render obvious an optical enhancing material wherein the material provides optical enhancement at light wavelengths between approximately 10 and 100,000 nanometers, in combination with the rest of the limitations of claim 91.

As to claim 93, the prior art of record, taken alone or in combination, fails to disclose or render obvious an optical enhancing material further comprising an analyte placed proximate a medium, in combination with the rest of the limitations of claim 93.

As to claim 97, the prior art of record, taken alone or in combination, fails to disclose or render obvious an optical enhancing material wherein a microcavity comprises one or more materials selected from the group consisting of dielectric and semiconductor materials, in combination with the rest of the limitations of claim 97.

As to claim 98, the prior art of record, taken alone or in combination, fails to disclose or render obvious an optical enhancing material wherein a microcavity is selected from the group consisting of spheres, deformed spheres, spheroids, rods, and tubes, in combination with the rest of the limitations of claim 98.

As to claim 99, the prior art of record, taken alone or in combination, fails to disclose or render obvious an optical enhancing material wherein a microcavity is a semiconductor laser cavity, in combination with the rest of the limitations of claim 99.

As to claim 100, the prior art of record, taken alone or in combination, fails to disclose or render obvious an optical enhancing material wherein a medium is located at one or more surfaces of a

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microcavity selected from the group consisting of inner and outer surfaces, in combination with the rest of the limitations of claim 100.

As to claim 101, the prior art of record, taken alone or in combination, fails to disclose or render obvious an optical enhancing material wherein the medium is an integrated component of a microcavity, in combination with the rest of the limitations of claim 101.

As to claim 106, the prior art of record, taken alone or in combination, fails to disclose or render obvious an optical sensing method comprising providing a doped fractal medium, locating the doped medium proximate a medium, and employing a microcavity, in combination with the rest of the limitations of claim 106.

As to claim 110, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method of detecting an analyte material comprising employing a microcavity, and exciting both the analyte material and a fractal medium in the vicinity of the analyte material with at least one light source, in combination with the rest of the limitations of claim 110.

As to claim 119, the prior art of record, taken alone or in combination, fails to disclose or render obvious a gratingless spectroscopy method comprising providing a fractal medium, and locating the medium in the vicinity of a microcavity, in combination with the rest of the limitations of claim 119.

As to claim 122, the prior art of record, taken alone or in combination, fails to disclose or render obvious a device for cryptography, coding and decoding information comprising a fractal medium, a light source incident on the medium, and one or more near-field detectors of the light emitted from the medium, in combination with the rest of the limitations of claim 122.

As to claim 126, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method for cryptography, coding and decoding information comprising providing a fractal medium, exciting the medium with a light source, and detecting light emitted from the medium in a near-field zone, in combination with the rest of the limitations of claim 126.

As to claim 142, the prior art of record, taken alone or in combination, fails to disclose or render obvious an optical amplifier additionally comprising a layer of coating material selected from the group consisting of molecules, nanocrystals, and nanoparticles placed proximate the medium, in combination with the rest of the limitations of claim 142.

As to claims 143, 151 and 183, the prior art of record, taken alone or in combination, fails to disclose or render obvious an optical amplification method, an optical switching method, and a method of generation of sub-femtosecond pulses comprising providing a fractal medium, and providing a microcavity, in combination with the rest of the limitations of claims 143, 151 and 183.

As to claim 155, the prior art of record, taken alone or in combination, fails to disclose or render obvious a super density optical recording device comprising a fractal medium, a layer of photosensitive materials placed proximate the medium, and one or more near-field detectors of light emitted from the medium and the layer of photosensitive material, in combination with the rest of the limitations of claim 155.

As to claim 159, the prior art of record, taken alone or in combination, fails to disclose or render obvious a super density optical recording method comprising providing a fractal medium, providing a layer of photosensitive materials placed proximate the medium, and detecting light emitted from the medium and photosensitive materials in a near-field zone, in combination with the rest of the limitations of claim 159.

As to claim 167, the prior art of record, taken alone or in combination, fails to disclose or render obvious a photochemical enhancing method comprising providing a fractal medium, and locating the medium in the vicinity of a microcavity, in combination with the rest of the limitations of claim 167.

As to claim 175, the prior art of record, taken alone or in combination, fails to disclose or render obvious a photobiological enhancing method comprising providing a fractal medium, providing a

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microcavity, and providing a photobiological agent placed proximate the medium, in combination with the rest of the limitations of claim 175.

*Additional Prior Art*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The prior art made of record is Natan et al. (USPN 6,149,868).

Natan discloses enhancing a Raman signal using aggregated nanoparticles.

*Conclusion*

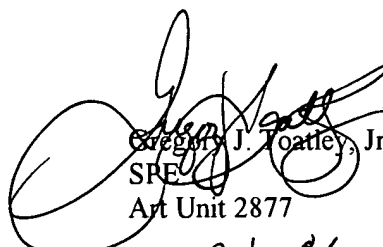
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kara E Geisel whose telephone number is **571 272 2416**. The examiner can normally be reached on Monday through Friday, 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on **571 272 2800 ext. 77**. The fax phone number for the organization where this application or proceeding is assigned is **571 273 8300**.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Gregory J. Toatley, Jr.  
SPE  
Art Unit 2877  
9 JAN 06

K.G.  
KEG  
January 9, 2006